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AGRICULTURE/FORESTRY  
HYDROLOGY

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Technical Monitor  
Code 902  
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- Color diazochrome films  
- Mapping programme  
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15. Abstract

## TYPE II QUARTERLY REPORT

### I. INTRODUCTION

The main objectives of the Mekong Committee investigations using LANDSAT-2 data are as follows:

#### A. Short-term objectives

By both photo-interpretation and automatic data processing techniques, supported by ground truth data and field surveys, establish:

- Land use, land capability and hydro-geomorphology maps of the lower Mekong basin;
- Maps showing primary forests and deciduous forest areas;
- Maps showing consecutive flood and drainage patterns of Mekong lowlands.

#### B. Long-term objectives

Organise a research programme for classification of agricultural crops and land use, and for soil moisture monitoring for crop forecasting.

### II. TECHNIQUES

#### 1. Data quality and delivery

No data were received during the period under review.

#### 2. Preparation of land use, land capability and hydrogeomorphology maps

No new development.

3. Research programme for computer processing of remote sensing data

No new development.

III. ACCOMPLISHMENTS DURING THE PERIOD UNDER REVIEW

1. Preparation of land use, land capability and hydro-geomorphology maps

1.1 Land use map

Sketches to the scale of 1:500,000 have been furnished to the mapping service for the preparation of the final map at the scale of 1:1,000,000. At the present time, the map is being published.

1.2 Morphopedologic map

This map was devised originally as a hydro-morphologic map. The interpretation drafts of the surface morphology and hydrology at a scale of 1:1,000,000 has been completed.

These results do not deserve to be published as it is impossible to check them by ground truth observations and due to the inadequacy of our geomorphological knowledge concerning an important part of the Mekong basin. The information given by satellite imagery in this field cannot be used without a ground truth observation.

As surface hydrology is concerned, it is impossible to represent the floods and subsidences in a coherent whole for surface as vast as the lower Mekong basin. We have been able to map only the maximum limits of zones covered by water or very wet during the rainy season. It has not been possible to ascertain the areas flooded by the river or those covered by rain or irrigation water generally accumulated in the

rice paddies during the rainy season. Similarly, the examination of satellite imagery does not allow to separate the flooded zones from the waterlogged or very wet soils without calling for a great deal of subjective evaluation. It was found that the publishing of these data would be of a limited interest.

It has been shown, on the contrary, that a morphopedological map can be perfectly established from the imagery transmitted by the satellite LANDSAT-2 during the dry season, which are of an exceptional quality, as well as new 1:500,000 topographic maps the value of which cannot be doubted and 1:1,000,000 pedologic maps established previously on the basis of observations made in the field.

Furthermore, geologic interpretation of the LANDSAT-2 negatives allow a better understanding of the pedogenesis.

These various studies permit the establishment of a 1:1,000,000 morphopedologic map having real value. This method gives a double precision:

- a precision of details in the soil map mentioned in earlier maps;
- an entirely new mapping of certain zones badly defined by earlier surveys.

The interpretation draft of this map is now completed. It must be shaped in the form of a final sketch before its publishing at a scale 1:1,000,000. Furthermore, the results obtained will have to be compared in a zone easily accessible to the situation on the ground. This has been done by ground truth observation, lasting one week, in Korat, Khon Kaen, Kalasin and Udon Thani (Northeast Thailand).

### 1.3 Land capability map

This map considers the principal elements synthesized from the morphopedological map and will integrate the climatic factors of hydric deficit for various cultures.

The grouping of different soils in great families is finished. This has been made using the methodology already employed for the establishing of the general map on soil capability of the Mekong basin. To each group of soil, soil capability is associated depending on the criteria defined by previous studies of the Mekong Secretariat.

These pedological data will furthermore be compared with the elements computed by the Mekong Secretariat on the annual deficit in crops.

The map on hydraulic deficit for rice paddies has been now established too.

### 2. Research programme for computer processing of remote sensing data

On the ground truth observations, collection of ground information over the observation site Number 1 and Number 2 is taken for every passes of the LANDSAT-2 satellite over the sites. The up-to-date information has been edited and recorded in computer files for future use.

On the processing of remote sensing data, the RECOG package which has 4 out of 6 phases of programming already implemented on IBM 370/145. The last 2 phases have been in the step of compiling and it will be ready for data analyses by September 1976. It is expected that a substantial progress will be made during the following quarter.

IV. CONCLUSION

Work on the general mapping programme progressed satisfactorily. It is expected that a substantial progress on the research programme for computer processing of remote sensing data will be made during the following reporting period, as the RECOG package is now implemented on IBM 370/145.

On the other hand, as no data were received during the period under review, it is desirable that NASA would resume the delivery of data as soon as possible.

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